UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

Office Action Summary	Application No.	Applicant(s)
	10/673,912	DALLY ET AL.
	Examiner	Art Unit	
	Andrew Chriss	2609	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date *9/29/2003*.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Claim Objections

1.   **Claims 19, 25, 39, and 41** objected to because of the following informalities.

Regarding **Claim 19**, the claim cites "a data communication router as claimed in Claim

16." Claim 16 cites a "data communication device," but not a "data communication router."

Regarding **Claim 25**, the claim cites "a data communication router as claimed in Claim

14." Claim 14 cites a "data communication device," but not a "data communication router."

Regarding **Claim 39**, the claim cites "a data communication device as claimed in Claim

38." Claim 38 is a method claim and cannot have an apparatus claim depend from it.

Appropriate correction is required.

Regarding **Claim 41**, the claim cites "a data communication device as claimed in Claim

40." Claim 40 is a method claim and cannot have an apparatus claim depend from it.

Appropriate correction is required.

Double Patenting

2.   A rejection based on double patenting of the "same invention" type finds its support in
the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and
useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same
invention," in this context, means an invention drawn to identical subject matter. See *Miller v.
Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957);
and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by
canceling or amending the conflicting claims so they are no longer coextensive in scope. The
filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35
U.S.C. 101.

3.   **Claims 1-12** rejected under 35 U.S.C. 101 as claiming the same invention as that of

claims 1, and 12-21 of prior U.S. Patent No. 6,285,679. This is a double patenting rejection.

Current Application Claim Number	Current Application Claim Text	U.S. Patent 6,285,679 Claim Number	U.S. Patent 6,285,679 Claim Text
1	"A router for routing data packets comprising: input physical channels for receiving at least portions of the data packets; output physical channels; data buffers, coupled with the input and output physical channels, for storing the portions of the data packers; and control circuitry, coupled with the input and output physical channels and the data buffers, for generating channel assignments in response to queued events, and outputting the portions of the data packets through the output physical channels according to the generated channel assignments."	1	"A router for routing data packets, comprising: input physical channels for receiving at least portions of the data packets; output physical channels; data buffers, coupled with the input and output physical channels, for storing the portions of the data packets; and control circuitry, coupled with the input and output physical channels and the data buffers, for generating channel assignments in response to queued events, and outputting the portions of the data packets through the output physical channels according to the generated channel assignments"
2	"The router of claim 1 wherein the control circuitry assigns virtual channels to the data packets in response to the queued events."	1	"the control circuitry assigning virtual channels to the data packets in response to the queued events"
3	"The router of claim 2 wherein the control circuitry is shared by multiple virtual channels and activated to handle a particular virtual channel in response to an event."	12	"The router of claim 1, wherein the control circuitry is shared by multiple virtual channels and activated to handle a particular virtual channel in response to an event."
4	"The router of claim 2 wherein the control circuitry further	13	"The router of claim 1, wherein the control circuitry further

Current Application Claim Number	Current Application Claim Text	U.S. Patent 6,285,679 Claim Number	U.S. Patent 6,285,679 Claim Text
	assigns the output physical channels to the virtual channels in response to the queued events."		assigns the output physical channels to the virtual channels in response to the queued events."
5	"The router of claim 4 wherein the control circuitry is shared by multiple virtual channels and activated to handle a particular virtual channel in response to an event."	14	"The router of claim 13, wherein the control circuitry is shared by multiple virtual channels and activated to handle a particular virtual channel in response to an event."
6	"The router of claim 1 wherein the control circuitry is adapted to generate physical channel assignments in response to the queued events."	15	"The router of claim 1, wherein the control circuitry is adapted to generate physical channel assignments in response to the queued events."
7	"The router of claim 6 wherein the control circuitry is shared by multiple virtual channels and activated to handle a particular virtual channel in response to an event."	16	"The router of claim 15, wherein the control circuitry is shared by multiple virtual channels and activated to handle a particular virtual channel in response to an event."
8	"The router of claim 1 further comprising: a multicomputer interface coupled with an input physical channel and an output physical channel such that the router forms a multicomputer router for a multicomputer system"	17	"The router of claim 1, further comprising: a multicomputer interface coupled with an input physical channel and an output physical channel such that the router forms a multicomputer router for a multicomputer system."
9	"The router of claim 1 further comprising: a line interface coupled with an input physical channel and an output physical channel such that the router forms an internet switch fabric router."	18	"The router of claim 1, further comprising: a line interface coupled with an input physical channel and an output physical channel such that the router forms an internet switch fabric router."
10	"The router of claim 2 wherein the data buffers correspond to input virtual channels which	19	"The router of claim 1, wherein the data buffers correspond to input virtual channels which

Current Application Claim Number	Current Application Claim Text	U.S. Patent 6,285,679 Claim Number	U.S. Patent 6,285,679 Claim Text
	share the input physical channels, wherein output virtual channels share the output physical channels, and wherein the control circuitry generates virtual channel assignments, each virtual channel assignment associating an input virtual channel with an output virtual channel."		share the input physical channels, wherein output virtual channels share the output physical channels, and wherein the control circuitry generates virtual channel assignments, each virtual channel assignment associating an input virtual channel with an output virtual channel."
11	"The router of claim 2 wherein the control circuitry includes: a state table that associates the output physical channels with input channels."	20	"The router of claim 1, wherein the control circuitry includes: a state table that associates the output physical channels with input channels."
12	"The router of claim 11 wherein the input channels are input virtual channels that share the input physical channels."	21	"The router of claim 20, wherein the input channels are input virtual channels that share the input physical channels."

4.   The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees.   A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

     A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5.   **Claims 13-16, 18-20, 23, 25, 26, 29-33, 35-37, 40, 42, 43, 46, and 47** rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 10, 19, and 27 of U.S. Patent No. 6,285,679. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons:

Regarding Claim 13, Applicant's claimed subject matter is unpatentable in view of the teachings of Claim 27 in U.S. Patent No. 6,285,679. Specifically, Claim 27 teaches "A method for routing data packets from input physical channels to output physical channels, the method comprising the steps of: receiving at least portions of the data packets over the input physical channels; generating channel assignments in response to queued events…outputting the portions of the data packets over the output physical channels according to the generated … channel assignments."

 Regarding Claim 14, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679. Specifically, Claim 1 teaches a router (a data communication device) comprising data buffers that store received data prior to transport. Examiner asserts that the condition of "prior to transport" is a normal operating condition of the device, thus the teaching of claim 1 renders this obvious. Further, Claim 1 teaches control circuitry, which generates channel assignments and outputs portions of the data, thus controlling the transport of data. Claim 1 also teaches a state table, which stores information with respect to data held (stored) on the input virtual channels. Claim 2 teaches that the state table logic accesses the output controller's state table to assign output virtual channels,

thus allocating resources based on the state information. Claim 2 further teaches an output

controller, which is part of the control circuitry, which includes an arbiter that selects arrival

events from multiple arrival queues, thus responding to data arrival events. Lastly, Claim 10

teaches an output controller, which is part of the control circuitry, that responds to credit events

from a downstream router, thus making it an output credit event.

Regarding Claim 15, Applicant's claimed subject matter is unpatentable in view of the

teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679, as described with regards to

Applicant's Claim 14 above, and further in view of Claim 4. Specifically, Claim 4 teaches a

router (Applicant's claimed data communications device) wherein received portions of data

packets (Applicant's claimed events) are enqueued for access to state information.

Regarding Claim 16, Applicant's claimed subject matter is unpatentable in view of the

teachings of Claims 1, 2, 4, and 10 in U.S. Patent No. 6,285,679, as described with regards to

Applicant's Claim 15 above, and further in view of Claim 3. Specifically, Claim 3 teaches a

state table, which stores state information, including state vectors that correspond to output

virtual channels (Applicant's claimed plural destinations).

Regarding Claim 18, Applicant's claimed subject matter is unpatentable in view of the

teachings of Claims 1-4 and 10 in U.S. Patent No. 6,285,679, as described with regards to

Applicant's Claim 16 above, and further in view of Claim 19. Specifically, Claim 19 teaches a

router (Applicant's claimed data communications device) wherein data buffers corresponds to (is

associated with) an input virtual channel. It would be obvious that the virtual channel would be

used to communicate in a virtual network across other network nodes (e.g., router, data

communication devices).

Regarding Claim 19, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1-4 and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 16 above. Specifically, Claim 3 teaches all of the limitations of Applicant's Claim 16, from which Claim 19 depends. Further, Claim 3 teaches a router, equivalent to Applicant's data communication router.

Regarding Claim 20, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 14 above, and further in view of Claim 3, and described with regards to Applicant's Claim 16 above.

Regarding Claim 23, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 14 above, and further in view of Claim 19 in U.S. Patent No. 6,285,679, and described with regards to Applicant's Claim 18 above.

Regarding Claim 25, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679. Claims 1, 2, and 10 teach all of the limitations of Applicant's Claim 14, from which Claim 25 depends. Further, Claim 1 teaches a router, equivalent to Applicant's data communication router.

Regarding Claim 26, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679. Claims 1, 2, and 10 teach all of the limitations of Applicant's Claim 14, from which Claim 26 depends. Further, Claim 10 teaches queuing a transport request to transport a portion of a data packet over the corresponding output physical channel. This is the equivalent of allocating resources in a transport event.

Regarding Claim 29, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679. Claims 1, 2, and 10 teach all of the limitations of Applicant's Claim 14, from which Claim 29 depends. Specifically, Claim 1 teaches receiving at least portions of data packets.

Regarding Claim 30, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679. Claims 1, 2, and 10 teach all of the limitations of Applicant's Claim 14, from which Claim 30 depends. Specifically, Claim 10 teaches the resource allocation of output physical channels.

Regarding Claim 31, Applicant's claimed subject matter is unpatentable in view of the teachings of Claim 1, 2, and 10 in U.S. Patent No. 6,285,679, and described with regards to Applicant's Claim 14 above.

Regarding Claim 32, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 31 above, and further in view of Claim 4, as described with regards to Applicant's Claim 15 above.

Regarding Claim 33, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, 4, and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 32 above, and further in view of Claim 3, as described with regards to Applicant's Claim 16 above.

Regarding Claim 35, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1-4 and 10 in U.S. Patent No. 6,285,679, as described with regards to

Applicant's Claim 33 above, and further in view of Claim 19, and described with regards to Applicant's Claim 18 above.

Regarding Claim 36, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, 4, and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 33 above, and further in view of Claim 3, and described with regards to Applicant's Claim 16 above.

Regarding Claim 37, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 31 above, and further in view of Claim 3, and described with regards to Applicant's Claim 16 above.

Regarding Claim 40, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1,2, and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 31 above, and further in view of Claim 19, and described with regards to Applicant's Claim 18 above.

Regarding Claim 42, Applicant's claimed subject matter is unpatentable in view of the teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679, as described with regards to Applicant's Claim 31 above. Further, Claim 1 teaches a router, equivalent to Applicant's data communications router.

Regarding Claim 43, Applicant's claimed subject matter is unpatentable in view of the teachings of Claim 1, 2, and 10 in U.S. Patent No. 6,285,679, and described with regards to Claim 26 above. Claims 1, 2, and 10 teach all of the limitations of Applicant's Claim 31, from which Applicant's Claim 43 depends. Further, Claim 10 teaches queuing a transport request to

transport a portion of a data packet over the corresponding output physical channel. This is the

equivalent of allocating resources in a transport event.

Regarding Claim 46, Applicant's claimed subject matter is unpatentable in view of the

teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679. Claims 1, 2, and 10 teach all of

the limitations of Applicant's Claim 31, from which Claim 46 depends, as described with regards

to Claim 29 above.

Regarding Claim 47, Applicant's claimed subject matter is unpatentable in view of the

teachings of Claims 1, 2, and 10 in U.S. Patent No. 6,285,679. Claims 1, 2, and 10 teach all of

the limitations of Applicant's Claim 31, from which Applicant's Claim 47 depends. Further,

Claim 10 teaches the resource allocation of output physical channels.

6.   **Claims 17, 21, 34, and 38** rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claims 1-4 and 10 of U.S. Patent No. 6,285,679, as

described with regards to Applicant's Claim 16 above, in view of Sengupta et al (United States

Patent 5,355,372), hereinafter Sengupta. Claims 1-4 and 10 teach all of the limitations of Claim

16 above. Claim 1 further teaches a router, which is a data communication device, comprising

data buffers. However, Claim 1 does not teach each data buffer being associated with a

destination. In the same field of endeavor, Sengupta teaches a switching system including "a

plurality of switching planes, each including a plurality of output buffer means, one for each of

the different associated with the output lines" (column 8, 33-36). It would have been obvious to

one of ordinary skill in the art at the time of the invention to combine the buffer means taught in

Sengupta with the teachings of U.S. Patent No. 6,285,679 in order to maintain balanced loads

across a plurality of switching planes or router output channels.

7.   **Claims 22 and 39** rejected on the ground of nonstatutory obviousness-type double

patenting as being unpatentable over claims 1-4 and 10 of U.S. Patent No. 6,285,679 in view of

Sengupta, as described with regards to Applicant's Claims 21 and 38 above, and further in view

of Munter et al (United States Patent 5,126,999), hereinafter Munter. Claim 1 further teaches a

router, which is a data communications device, comprising data buffers. However, Claim 1 does

not teach a static association between a data buffer and a destination. In the same field of

endeavor, Munter teaches a plurality of storage buffers that "bear a fixed assignment relationship

on a one-to-one basis to each other" (column 3, line 62 through column 4, line 6). It would have

been obvious to one of ordinary skill in the art at the time of the invention to combine the fixed

association taught in Munter with the teachings of U.S. Patent No. 6,285,679 in order to resolve

contention among outputs of a switch or a router.

8.   **Claims 24 and 41** rejected on the ground of nonstatutory obviousness-type double

patenting as being unpatentable over claims 1-4, 10, and 19 of U.S. Patent No. 6,285,679 in view

of Munter. Claim 19 further teaches a router, which is a data communications device,

comprising data buffers. However, Claim 19 does not teach a static association between a data

buffer and a destination. In the same field of endeavor, Munter teaches a plurality of storage

buffers that "bear a fixed assignment relationship on a one-to-one basis to each other" (column 3,

line 62 through column 4, line 6). It would have been obvious to one of ordinary skill in the art

at the time of the invention to combine the fixed association taught in Munter with the teachings

of U.S. Patent No. 6,285,679 in order to resolve contention among outputs of a switch or a router.

9.   **Claims 27, 28, 44, and 45** rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 10, and 19 of U.S. Patent No. 6,285,679 in view of Freerksen et al (United States Patent 6,000,011), hereinafter Freerksen.

Regarding Claims 27 and 44, Claims 1, 2, and 10 teach all of the limitations of Applicant's Claims 14 and 31, as described above. Further, Claim 10 teaches the allocation of resources based on state information. However, Claim 10 does not teach the allocated resources including data buffers. In the same field of endeavor, Freerksen teaches an allocated portion of a data buffer (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the data buffer allocation taught in Freerksen with the teachings of U.S. Patent No. 6,285,679 in order to overcome the drawbacks of conventional cache line buffers.

Regarding Claim 28, Claims 1, 2, and 10 and Freerksen teach all of the limitations of Applicant's Claim 27 above. Further, Claim 19 of U.S. Patent No. 6,285,679 teaches a router (Applicant's claimed data communications device) wherein data buffers corresponds to (is associated with) an input virtual channel, as described with regards to Applicant's Claim 18 above.

Regarding Claim 45, Claims 1, 2, and 10 and Freerksen teach all of the limitations of Applicant's Claim 44 above. Further, Claim 19 of U.S. Patent No. 6,285,679 teaches a router (Applicant's claimed data communications device) wherein data buffers corresponds to (is

associated with) an input virtual channel, as described with regards to Applicant's Claim 18

above.

Claim Rejections - 35 USC § 102

10.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11.   **Claim 14-17, 20, 21, 26, 27, 29-34, 37, 38, 43, 44, 46, and 47** rejected under 35

U.S.C. 102(e) as being anticipated by Caldara (United States Patent 5,982,771).

Regarding Claim 14, Caldara teaches a network switch (equivalent to Applicant's

claimed data communication device) comprising data buffers (126 and 128 in Figure 1) that store

received data prior to transport. Further, Caldara teaches control circuitry (e.g., bandwidth

arbiter 12 in Figure 1) that controls transport of data cells (column 4, lines 64-65). The control

circuitry is responsive to data arrival events (column 5, lines 25-32) and is responsive to the

results of a query as to whether sufficient space is available at the destination output queue

(column 5, lines 41-44), equivalent to Applicant's claimed output credit events. Caldara teaches

a further feature of the control feature to store state information (column 6, line 18) and allocate

resources (e.g., bandwidth) based on the state information (column 6, line 7-10).

Regarding Claim 15, Caldara teaches a cell buffer RAM 48 where the actual cells are

buffered while they await transmission to a network link. While they are buffered, the cells gain

access to the buffer state update information via update cells (column 5, line 65 through column

6, line 9).

Regarding Claim 16, Caldara teaches a state table having bit vectors (90 in Figure 5)

associated with each of plural destinations (column 7, line 64 through column 8, line 5).

Regarding Claim 17, Caldara teaches that each data buffer is associated with a

destination (e.g., input ports and output ports) (Figure 1).

Regarding Claim 20, Caldara teaches the state information being stored in a state table

having a state vector for each of plural destinations, as described with regards to Claim 16.

Regarding Claim 21, Caldara teaches that each data buffer is associated with a

destination, as described with regards to Claim 17 above.

Regarding Claim 26, Caldara teaches that resources as part of data cell transport

(column 4, line 60), equivalent to Applicant's claimed transport event.

Regarding Claim 27, Caldara teaches that the allocated resources include data buffers

(Column 5, line 65-66).

Regarding Claim 29, Caldara teaches that the received data is a data cell, which is

equivalent to Applicant's claimed at least a portion of data packets (column 5, line 25).

Regarding Claim 30, Caldara teaches that the allocated resources include physical

channels are resources allocated. Specifically, Caldara teaches that "input ports of the network

switch may support a number of unidirectional physical links over which traffic is received and

output ports of the switch may likewise support a plurality of unidirectional physical links over

which network traffic is transmitted" (column 1, lines 21-26).

Regarding Claim 31, Caldara teaches a method wherein received data is stored (Column 5, line 65-66), as well as responding to data arrival events (column 5, lines 25-32) and output credit events (column 5, 41-44) to store state information with respect to stored data (column 6, line 18) and allocate resources in response to that state information (column 6, 7-10).

Regarding Claim 32, Caldara teaches a method wherein events are enqueued for access to the state information, as described with regard to Claim 15 above.

Regarding Claim 33, Caldara teaches the state information being stored in a state table having a state vector for each of plural destinations, as described with regards to Claim 16.

Regarding Claim 34, Caldara teaches that each data buffer is associated with a destination, as described with regards to Claim 17 above.

Regarding Claim 37, Caldara teaches the state information being stored in a state table having a state vector for each of plural destinations, as described with regards to Claim 16.

Regarding Claim 38, Caldara teaches that each data buffer is associated with a destination, as described with regards to Claim 17 above.

Regarding Claim 43, Caldara teaches that resources are allocated in a transport event, as described with regards to Claim 26.

Regarding Claim 44, Caldara teaches that the allocated resources include data buffers, as described with regards to Claim 27.

Regarding Claim 46, Caldara teaches the received data defining at least portions of data packets, as described with regards to Claim 29 above.

Regarding Claim 47, Caldara teaches the allocation of physical channel resources, as described with regards to Claim 30 above.

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating obviousness
           or nonobviousness.

14.   **Claim 13** rejected under 35 U.S.C. 103(a) as being unpatentable over Carvey et al

(United States Patent 5,734,649), hereinafter Carvey, in view of Caldara. Carvey teaches a

method for routing data packets from input physical channels to output physical channels

(column 3, lines 52-64). Further, Carvey teaches the step of receiving at least portions of the

data packets over the input physical channels (column 3, lines 65-67). However, Carvey does

not teach the steps of generating channel assignments in response to queued events (column,

line), and outputting the portions of the data packets through the output physical channels

according to the generated channel assignments. In the same field of endeavor, Caldara teaches

generating channel assignments in response to queued events (column 9, line 30-32), and

outputting the portions of the data packets through the output physical channels according to the

generated channel assignments (column 10, line 38-39). It would have been obvious to one of

ordinary skill in the art at the time of the invention to combine the teachings of Caldara with the

teachings of Carvey in order to efficiently allocate available bandwidth while assuring that

minimum bandwidth and delay requirements of connections are satisfied.

15.   **Claims 18, 22-24, 28, 35, 39-41, and 45** rejected under 35 U.S.C. 103(a) as being

unpatentable over Caldara in view of Turner (United States Patent 5,179,556).

Regarding Claim 18, Caldara teaches all of the limitations of Claim 16, as described

above. However, Caldara does not teach each data buffer being associated with a virtual channel

in a virtual network across network nodes. In the same field of endeavor, Turner teaches "a

buffer is assigned for each data link comprising a virtual circuit" (column 30, lines 36-37).

Turner's invention is directed to ATM networks, which establish virtual connections, thus

comprising a virtual network across network nodes. It would have been obvious to one of

ordinary skill in the art at the time of the invention in order to achieve acceptable burst loss rates,

as well as discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 22, Caldara teaches all of the limitations of Claim 21, as described

above. However, Caldara does not teach the association of a data buffer with a destination being

static. In the same field of endeavor, Turner teaches "*a* buffer is assigned for *each* data link"

(emphasis added) (column 30, lines 36-37). It would have been obvious to one of ordinary skill

in the art at the time of the invention in order to achieve acceptable burst loss rates, as well as

discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 23, Caldara teaches all of the limitations of Claim 14, as described

above. However, Caldara does not teach each data buffer being associated with a virtual channel

in a virtual network across network nodes. In the same field of endeavor, Turner teaches "a

buffer is assigned for each data link comprising a virtual circuit" (column 30, lines 36-37).

Turner's invention is directed to ATM networks, which establish virtual connections, thus

comprising a virtual network across network nodes. It would have been obvious to one of

ordinary skill in the art at the time of the invention in order to achieve acceptable burst loss rates,

as well as discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 24, Caldara and Turner teach all of the limitations of Claim 23 above.

However, Caldara does not teach the association of a data buffer with a virtual channel being

static. In the same field of endeavor, Turner teaches "*a* buffer is assigned for *each* data link"

(emphasis added) (column 30, lines 36-37). It would have been obvious to one of ordinary skill

in the art at the time of the invention in order to achieve acceptable burst loss rates, as well as

discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 28, Caldara teaches all of the limitations of Claim 27, as described

above. However, Caldara does not teach the data buffers corresponding to virtual channels. In

the same field of endeavor, Turner teaches "a buffer is assigned for each data link comprising a

virtual circuit" (column 30, lines 36-37). It would have been obvious to one of ordinary skill in

the art at the time of the invention in order to achieve acceptable burst loss rates, as well as

discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 35, Caldara teaches all of the limitations of Claim 33, as described

above. However, Caldara does not teach each data buffer being associated with a virtual channel

in a virtual network across network nodes. In the same field of endeavor, Turner teaches "a

buffer is assigned for each data link comprising a virtual circuit" (column 30, lines 36-37).

Turner's invention is directed to ATM networks, which establish virtual connections, thus comprising a virtual network across network nodes. It would have been obvious to one of ordinary skill in the art at the time of the invention in order to achieve acceptable burst loss rates, as well as discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 39, Caldara teaches all of the limitations of Claim 38, as described above. However, Caldara does not teach the association of a data buffer with a destination being static. In the same field of endeavor, Turner teaches "*a* buffer is assigned for *each* data link" (emphasis added) (column 30, lines 36-37). It would have been obvious to one of ordinary skill in the art at the time of the invention in order to achieve acceptable burst loss rates, as well as discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 40, Caldara teaches all of the limitations of Claim 31, as described above. However, Caldara does not teach each data buffer being associated with a virtual channel in a virtual network across network nodes. In the same field of endeavor, Turner teaches "a buffer is assigned for each data link comprising a virtual circuit" (column 30, lines 36-37). Turner's invention is directed to ATM networks, which establish virtual connections, thus comprising a virtual network across network nodes. It would have been obvious to one of ordinary skill in the art at the time of the invention in order to achieve acceptable burst loss rates, as well as discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 41, Caldara and Turner teach all of the limitations of Claim 40 above. However, Caldara does not teach the association of a data buffer with a virtual channel being static. In the same field of endeavor, Turner teaches "*a* buffer is assigned for *each* data link" (emphasis added) (column 30, lines 36-37). It would have been obvious to one of ordinary skill

in the art at the time of the invention in order to achieve acceptable burst loss rates, as well as

discarding cells from as few virtual circuits as possible in an overloaded network.

Regarding Claim 45, Caldara teaches all of the limitations of Claim 44, as described

above. However, Caldara does not teach the data buffers corresponding to virtual channels. In

the same field of endeavor, Turner teaches "a buffer is assigned for each data link comprising a

virtual circuit" (column 30, lines 36-37). It would have been obvious to one of ordinary skill in

the art at the time of the invention in order to achieve acceptable burst loss rates, as well as

discarding cells from as few virtual circuits as possible in an overloaded network.

16. **Claims 19, 25, 36, and 42** rejected under 35 U.S.C. 103(a) as being unpatentable over

Caldara in view of Carvey. Caldara teaches all of the limitations of claims 14, 16, 31, and 33 as

described above. However, Caldara does not teach a data communications *router* (emphasis

added). In the same field of endeavor, Carvey teaches a router (Column 7, line 57). It would

have been obvious to one of ordinary skill in the art at the time of the invention to combine the

router taught in Carvey with the teachings of Caldara in order to rapidly and efficiently allocate

available connection points.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Andrew Chriss whose telephone number is 571-272-1774. The

examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Charles Garber can be reached on 571-270-1202. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

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like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andrew Chriss
Examiner
Art Unit 2609

AC